



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/656,840

09/05/2003

William A. Moffatt

1008-US

8406

7590
MICHAEL A. GUTH
2-2905 EAST CLIFF DR.
SANTA CRUZ, CA 95062

01/18/2007

EXAMINER

STOUFFER, KELLY M

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
----------------------------------------	-----------	---------------

3 MONTHS

01/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/656,840

Applicant(s)

MOFFATT ET AL.

Examiner

Kelly Stouffer

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 1-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 7 December 2006 have been fully considered but they are not persuasive.

The applicant argues that Loan et al. does not teach the now amended limitations of claims 20 and 40 including "coating said substrate with said first chemical". Though Loan et al. cites examples of using precursors to coat the substrate in its disclosed method, Loan et al. also describes a precursor being delivered to a substrate in a pure form and limiting decomposition of the precursor (column 3 lines 38-65). One of ordinary skill in the art would recognize that if it were desirable, this method could then be used to deposit the precursor on the substrate using the method of Loan et al. It is also noted that during a CVD process, it is common that the precursor may be deposited on the surface of the substrate to react with another precursor, therefore forming the resultant film. As such, Loan et al. still meets the limitations of claims 20 and 40 as they are written.

The applicant further argues that claims 24-31 and 40-50 do not meet the limitation of having a dehydration step, and that the office action cites a piece of hardware capable of use in a dehydration step in Loan et al. but not the actual step. The dehydration step, defined by the applicant in paragraph 48 of using high pressure gas routed to gas valves and deposited in a valve bank, is met by Loan et al. in the cited section (column 7 lines 60-67) as it is describing flowing high pressure gas routed to

Art Unit: 1762

gas valves and deposited a valve bank. As it is broadly described in the specification, Loan et al. also meets the dehydration step when flowing argon in column 15 lines 55-62.

In addition, the applicant argues that silane is taught by Loan et al. in reference to the prior art. This is agreed upon by the examiner, and the statement that silane may be used as a precursor in the process of Loan et al. is made to the extent that it is known to use silane in a CVD process.

Additional arguments made by the applicant are based upon those refuted above. Therefore, the rejections of the previous office action are maintained, and are repeated here in their entirety.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-22, 24-26, 28-40, 46, and 48 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Loan et al. (US 6,136,725).

Loan teaches a method in which a CVD process is performed in a process chamber. The reactants are fed into vaporization chambers prior to being fed into the process chamber (abstract). Each reactant may have its own vaporizer chamber (column 5, lines 30-36). The pressure is adjusted for each process step (column 13,

Art Unit: 1762

lines 22-39). This reads on the second pressure being higher or lower than the first pressure. The inert gas is taught (column 7, lines 60-67). Silane is taught to be one of the reactants (column 2, lines 5-15). The chamber is taught to be evacuated and purged with an inert gas (column 7, lines 60-67), which reads on the dehydration step, according to the applicant's own specification (paragraph 48).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725).

Loan teaches the limitations above, but is silent to the inert gas being nitrogen. However, nitrogen (N₂) is a known inert gas. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize nitrogen in the process taught by Loan. By doing so, one would have a reasonable expectation of success, as Loan teaches the use of an inert gas and nitrogen is a known inert gas.

Claims 23 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725).

Loan teaches the limitations above, but is silent to the reservoir being the manufacture's source bottle. However, it is explicitly taught that the chemicals used as the precursors have a low vapor pressure (low tendency to evaporate under atmospheric pressures) (column 2, lines 30-40). It is also taught that the invention is not sensitive to gas or solids that may get absorbed into the chemicals (column 1, lines 40-67). From this, one of ordinary skill would understand that no special reservoir is required for the process. Additionally, since chemicals would come from the manufacturer already in a container that is suitable for holding the specific chemical, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the manufacturer's own source bottle in the process taught by Loan. By doing so, one would have a reasonable expectation of success, as Loan makes obvious that no special reservoir is required and the manufacturer would already provide a bottle that is suitable for holding the specific chemical contained within.

Claims 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725), as applied to claims above, and further in view of the applicant's admitted prior art.

Loan teaches the process above is pertinent for reactants with low volatility, but is silent to using amino silanes and other specific silanes claimed by the applicant. However, the applicant admits that it is well known in the art to deposit amino, mercapto, or epoxy silanes to glass substrates and that the reactants have low volatility (paragraph 10). It would have been obvious at the time the invention was made to a

Art Unit: 1762

person having ordinary skill in the art to use the reactants is substrates claimed by the applicant in the process taught by Loan. By doing so, one would have a reasonable expectation of success, as the process taught by Loan is best for low volatile reactants and the applicant admits that these reactants are known and have low volatility.

Claims 41-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loan et al. (US 6,136,725), as applied to claims above, and further in view of Uhlenbrock et al. (US 6,214,729 B1).

Loan teaches the limitations above, but is silent to using a syringe pump. However, Uhlenbrock teaches the art recognized suitability of using a syringe pump to pick up the liquid feed and deliver it to a vaporizer (figure 1; example 1). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a syringe pump in the process taught by Loan. By doing so, one would have a reasonable expectation of success, as Loan teaches delivering a liquid to a vaporizer and Uhlenbrock teaches the art recognized suitability of using a syringe pump to do so.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 1762

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Stouffer whose telephone number is (571) 272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer

Application/Control Number: 10/656,840
Art Unit: 1762

Page 8

Examiner
Art Unit 1762

kms



TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER